# POWERED INDUSTRIAL TRUCKS (PIT's) - SAFE USE AND OPERATIONS

#### INTRODUCTION

Forklifts, tow-motors and other powered material handling equipment are used throughout Fermilab to perform a variety of functions. Equipment of this type are often grouped together under the title "powered industrial trucks". The use of powered industrial trucks creates a potential for serious injury and property loss. This chapter contains procedures to ensure that the operation, inspection, and maintenance of powered industrial trucks is conducted in a safe manner and that operators are qualified to operate the truck safely.

#### APPLICABILITY

This chapter applies to any powered industrial trucks (commonly referred to as fork trucks) used at Fermilab. Examples include:

- Sit Down Rider, Counter-Balanced Truck (Solid and Pneumatic Tires)
- Narrow Aisle Trucks (Solid Tires)
- Hand Trucks or Hand/Rider Trucks (Solid Tires)
- Internal Combustion Engine Trucks (Solid or pneumatic tires)
- Electric and Internal Combustion Engines Tractors (Solid and pneumatic Tires)
- Rough Terrain Forklift Trucks (Pneumatic Tires)
- Magnet Movers

#### **DEFINITIONS**

<u>Bulldozing</u> - the action that results when an operator would have one pallet on the forks, then use the load to push other pallets ahead of the truck. Bulldozing may also involve having two pallets arranged vertically on the forks plus pushing up to six pallets (single or double stacked) out in front of the truck.

<u>Electric pallet truck</u> - an electrically-powered pallet truck.

<u>Employee</u> - For the purpose of this chapter includes Fermilab direct hired personnel, term and temporary employees and contract technicians.

<u>Forklift truck</u> - a self-loading truck equipped with load carriage and forks for transporting and tiering loads.

<u>Magnet Movers</u> - A vehicle or tractor-trailer combination, which is equipped for the purpose of lifting, moving and setting beam line magnets or other such large heavy objects in the beam line enclosures. The trailer may be pulled or pushed by the tractor. Lift tables on wheels are excluded from this definition unless they are towed by a tractor while carrying a load.

<u>Non-employee</u> - This category defines subcontractors and their employees, users, experimenters, graduate students, experimental collaborators, visiting or guest scientists and engineers, and DOE employees.

<u>Pallet truck</u> - a self-loading, low lift truck equipped with wheeled forks of dimensions to go between the top and bottom boards of a double-faced pallet and having wheels capable of lowering into spaces between the bottom boards so as to raise the pallet off the floor for transporting.

<u>Powered Industrial Trucks</u> (PIT) - equipment designed to move, lift, carry, stack, push, and pull materials or equipment. This includes forklifts, electric pallet movers and magnet movers. These equipment may be electrically-powered, gasoline-powered, LP-gas-powered, or diesel.

<u>Qualified Fermilab Evaluator</u> - A designated Fermilab employee whose purpose is to evaluate the powered industrial truck operator evaluators among divisions/sections. This evaluation is aimed at ensuring evaluation maneuvers, and evaluation protocols are standard and objective.

<u>Qualified Operator</u> - An employee deemed competent by management after successfully completing the classroom and performance phases of training as required in this chapter and demonstrates proficiency operating a PIT during an evaluation phase administered by a designated division/section evaluator.

<u>Qualified Person</u> - a person who, by possession of a recognized degree in an applicable field or a certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

<u>Split-forking</u> - is the action that results when the operator moves two palletized loads by inserting one fork in each pallet. On trucks with hydraulic adjustable forks, the operator may then bring the forks as close to each other as possible, clamping the pallets together, before lifting and transporting palletized loads. Alternatively, with a hydraulically adjustable forks or not, the operator may push the split-forked pallets across the floor.

<u>Tractors</u> - An industrial tractor, tugger or locomotive designed exclusively for towing a trailer or other load on wheels at speeds of 5 mph or less. The tractor may be hitched to a load at either end, if two appropriate hitches are provided by the manufacturer or user. A locomotive may have rail cars hitched at both ends at once. Farm tractors in agricultural service, lawn mowing tractors, and licensed road-going tractors are excluded from this definition.

#### **POLICY**

The operation, inspection, maintenance, and testing of powered industrial trucks and associated equipment shall be in accordance with mandatory standards. For powered industrial trucks, these standards are:

- 29 CFR 1910, Subpart N, OSHA General Industry Standards, Materials Handling and Storage
- 29 CFR 1926.602 (c), (d) Material Handling Equipment
- ASME B56.1 Series, Safety Standard for Low Lift and High Lift Trucks

Requirements applicable to all powered industrial trucks are highlighted in this Chapter. Other requirements may exist that are specific to a certain style, size, or use of a particular piece or type of equipment. The appropriate standards are to be consulted by those assigned responsibility for powered industrial truck operations to identify specific requirements, recommendations, and guidance for the safe operation and use of this equipment. Assistance with the implementation of these standards can be obtained from division/section ES&H personnel and the ES&H Section, if requested.

Another source of information is the DOE Hoisting and Rigging Manual available for review in the ES&H Section or in division/section ES&H offices. This manual is not part of the Work Smart Standards but it is available as a reference.

#### RESPONSIBILITIES

#### Division/Section Heads

- Implementation of the requirements associated with the use of powered industrial trucks.
- Ensuring that powered industrial truck operators are trained and qualified to perform their assigned duties.
- Appointing evaluators.
- Developing and implementing access control procedures of powered industrial trucks.
- Maintaining documentation of monthly inspection reports on each powered industrial truck owned.

#### **Business Services Section**

- Responsible for the maintenance and maintenance records of all powered industrial trucks owned and operated by Fermilab.
- Distribution of inspection, testing and maintenance reports to the division/section head upon request.
- Assist Division/Sections in the seat belt retrofit program.

#### **ES&H Section**

- Coordinate with training providers to obtain qualified trainers.
- Maintain the lesson plan and training materials.
- Maintaining documentation of all classroom training, on-the-job training and evaluations.

## **Training and Qualifications**

### Operator Qualification:

<u>Employee</u> - Operator training and qualification shall include those requirements identified in regulatory standards (29CFR1910.178). In addition, the prospective powered industrial truck operator must hold a valid drivers license from any of the fifty states.

<u>Qualification Training</u> - Qualification training shall include both a classroom and a performance phase. At a minimum, the training shall meet the learning objectives specified in Fermilab Training Course No. FN000014/Forklift Operator Training.

Demonstration of the operator's abilities to perform all activities expected or anticipated for the job will be part of the qualification process during the performance phase.

The performance evaluation must be conducted in the environment similar to where the employee is expected to operate the PIT. Employees who operate powered industrial trucks in several locations throughout the Laboratory are required to be evaluated on one representative PIT that the employee is expected to operate.

Magnet Mover operators are to be evaluated in the tunnels and enclosures.

A designated division/section evaluator shall observe such demonstrations and document the performance results. Documents reflecting successful demonstration of operator abilities shall be maintained in the TRAIN database. Operator qualification is for a period of three (3) years unless withdrawn within that period by the operator's supervisor. Re-qualification training will include both a classroom phase and a performance phase.

<u>Certification records</u> - Training records certifying operator qualification shall include the name of the trainee, date of training, and the signature of the trainer or evaluator.

Remedial training - Remedial training will be provided to individuals who do not successfully pass the qualification course. The course instructor or operator evaluator will determine the level of remedial training required. Remedial training will be provided also to operators involved in an accident, a near-miss incident, or who are observed operating a forklift in an unsafe manner. The employee's supervisor in consultation with the division/section senior safety officer will determine the level of remedial training needed under these circumstances.

<u>Non-employee</u> - Qualification of non-employees requesting to operate powered industrial trucks owned by Fermilab shall be made by a qualified evaluator of the division/section responsible for the equipment to be operated. In all cases, where previous training and experience is used as the basis for accepting qualification, such training and experience shall be certified in writing by the employer as meeting the requirements of 29CFR1910.178. When there are special hazards/features associated with a particular piece of equipment, e.g., unfamiliar controls or modifications to the original design, a qualified division/section evaluator will determine whether the operator(s) (including professional contract operators and contract riggers) shall receive documented job instructional training from Fermilab supervisory personnel.

In the case of subcontractor personnel follow the procedures under the section "Loaning of Powered Industrial Trucks".

## **Daily Inspections**

<u>Daily Inspections</u> - A safety inspection shall be completed for each powered industrial truck prior to the start of each shift, or prior to the first use of the day for equipment not in continuous service. A qualified operator shall conduct the inspection, and preferably one that is familiar with the specific equipment. The inspector shall review the elements listed on the checklist provided for guidance at the end of this chapter.

Daily inspections are not required for equipment that is not in service. Prior to being placed back into service, the daily inspection shall be completed by a qualified operator.

## **Evaluator Program**

The Assistant Laboratory Director for Operations will designate a Fermilab lead evaluator in writing. This lead evaluator will in turn conduct evaluations every three years of the designated division/section employees assigned to evaluate powered industrial truck operators. The intent of this program is to standardize the manner and rigor in which evaluations are administered, the maneuvers that will be required and to develop criteria to maintain a degree of objectivity in the manner that operators are approved to operate PIT's. The lead evaluator will submit a yearly report to the ES&H Section by October 1 listing all the division/section evaluators who have completed their checks during the prior fiscal year. This report will list the name, employee number, div/sec, the type of trucks the evaluator can conduct evaluations for and a facsimile of the signature of the person evaluated.

## **Operations**

Powered Industrial trucks shall only be used in the environment, atmospheres and surfaces for which they are designated by the manufacturer for use.

Note: See 29 CFR 1910.178(b).

<u>Installation of Operator Restraint Systems (Seat Belts)</u> - All powered industrial trucks shall be fitted with seatbelts. Those PIT's for which retrofit kits are not available are exempt from this requirement. Division/Section Heads shall notify the ESH Section of any powered industrial truck that cannot be retrofitted.

<u>Use of Seat Belts</u> - Seat belt use is mandatory at all times when the operator is seated on the truck and the truck is equipped with seat belts. Notify the building manager if

seatbelts were installed but are missing and tag the truck "Out of Service" until seat belts can be installed.

Exception: Magnet movers and towmotors when used in tunnels and enclosures.

Line managers may waive the seat belt use requirement on trucks so equipped if it can be shown by a hazard analysis that the use of the seat belt will create a bigger hazard.

<u>Prohibited Work Practices</u> - The practice of split-forking is prohibited. The practice of bulldozing is prohibited also unless specifically authorized in writing by the line manager.

The use of a spinner knob on the steering wheel is not allowed except on stand-up rider trucks where steering is designed to be accomplished with one hand and a steering wheel is used or, if the powered industrial truck is equipped with an anti-kickback device on the steering mechanism. The operator must exercise caution when using a spinner knob to avoid over-controlling the vehicle that would cause the vehicle to tip over.

<u>Inspections and Documentation of Approved Attachments</u> - All attachments and accessories used in the course of operating a powered industrial trucks must be used in accordance with the manufacturer's requirements and recommendations. The manufacturer will be contacted for information regarding specific inspection criteria. Periodic inspections of attachments and accessories are the responsibility of the owner and will be performed in accordance with the manufacturer's recommendations. At a minimum, each accessory or attachment will be inspected before each use. On a monthly basis, a documented inspection shall be made of each accessory or attachment when in regular use. Each division/section shall document the monthly inspections using forms provided at the end of this chapter.

<u>Modifications And Additions</u> - Modifications and additions that affect the capacity and safe operation of a powered industrial truck require formal review. Capacity, operation, and maintenance instruction plates, tags, or decals need to be modified accordingly. The formal review is satisfied by one of the following actions:

- Written approval from the truck manufacturer.
- Written approval from a registered professional engineer in the State of Illinois.
- Completion of an Engineering Note. The Note shall be prepared by a qualified person and approved by an independent, qualified reviewer.

<u>Procurement or Significant Modification</u> - Divisions/Sections wishing to purchase or modify existing PIT's shall prepare the technical specifications in consultation with BSS-

Support Services to ensure the standardization of equipment and that provisions are in place to address maintenance requirements.

<u>Attachment Identification</u> - All attachments or accessories will be assigned a unique identifying ID by the responsible division/section to facilitate periodic inspections. All attachments and accessories shall display the ID legibly, and where applicable, the load rating. Attachments will be removed from service if the ID and/or the load rating are not legible.

<u>Powered Industrial Truck Repair</u> - Repairs on all powered industrial trucks will be conducted by the Support Services Department of the Business Services Section, or, as their agent, a qualified vendor working under the direction of the Support Services Department.

<u>Acceptance Testing</u> - The Business Services Section shall arrange for documented inspection and testing of a new powered industrial truck before placing in service or after extensive repairs to a damaged one are made. The owner shall be provided with copies of acceptance testing documentation.

<u>Control of Access to Powered Industrial Trucks</u> - Means shall be provided to prevent forklifts, tow-motors, and other powered industrial trucks from use by unqualified personnel (e.g., restricting access, locking operating controls, removing ignition keys, or other appropriate measures). This is the responsibility of the division/section who owns the equipment.

<u>Damage to Powered Industrial Trucks</u> - When a powered industrial truck is damaged in an accident, it will be tagged and locked "out of service" by the division/section responsible for the truck. Owners will investigate and document incidents resulting in damage to a powered industrial truck. Do not return to service until repaired and, if applicable, until acceptance testing has been completed (See Acceptance Testing paragraph above).

<u>Approval for Special or Unusual Lifts</u> - Powered industrial trucks shall be operated within their rated load limits except in special or unusual cases when approved in writing by the division/section head. The division/section head may request a hazard analysis for such cases. The Mechanical Safety Subcommittee (MSS) and the division/section senior safety officer may be used as consultants, if requested.

## Preventive Maintenance and Repair Program

The Business Services Section (BSS) will administer a maintenance and repair program for all powered industrial trucks owned by Fermilab divisions and sections. This program will provide for semi-annual preventive inspections and maintenance for all equipment; and for any unforeseen maintenance and repair work necessary to keep the equipment in safe operating condition.

Frequency of preventive maintenance inspections, other than semi-annual, will be determined by the owner based on use.

These services shall be conducted by the Support Services Department of the Business Services Section or, as their agent, a qualified maintenance contractor determined by a "Request for Proposal (RFP) with Qualifications" to assure professional services. The program will be carried out in conjunction with the division/section head responsible for the equipment. The division/section head is responsible for ensuring that all powered industrial trucks within their areas of responsibility are included in the program and shall establish and inform BSS of times of availability. All costs for inspection, testing, and maintenance shall be the responsibility of the division/section that owns the equipment.

*Note: Maintenance and repair of rental powered industrial trucks and associated equipment is* the responsibility of the vendor as per contract documents unless the division/section administering the contract specifies otherwise.

## **Loaning of Powered Industrial Trucks**

Loaning of a powered industrial truck to sub-contractor personnel must follow the requirements found in FESHM 7010. The owner of the PIT must fill out the Sub-Contractor Acceptance And Use Of Fermilab Tools/Equipment form #20 found in FESHM 7010 and verify that the operator meets the training requirements established in this chapter or the training requirements published in the Code of Federal Regulations.

## **Driving Powered Industrial Trucks On Fermilab Main Roads**

At times it may be necessary to drive a powered industrial truck on Fermilab roads. These are slow moving vehicles that may introduce a collision hazard because of their slow speeds. The owner of the truck shall request an escort from the security services to follow the truck to its destination. The security vehicle needs to have all security emergency lights and strobes ON. Another vehicle may provide escort if Security is not

able to provide the service. The escort vehicle must have the emergency flashers ON. A powered industrial truck equipped with a rotating yellow light or yellow strobe light and an operating horn does not need an escort as long as the rotating yellow light or yellow strobe and the horn are in working condition and the lights turned ON. A powered industrial truck without a yellow strobe or rotating beacon requires an escort when transiting.

Escort duties are only required when transiting:

- Wilson Road
- Pine Street
- Batavia Road
- Road A
- Road B
- Road D



Operator's Daily Checklist By Week			Truck No Week Ending (Date						te)					
Hour Meter Reading														
		Date		Date		Date		Date	Date		Date		Date	
	N/A		Needs		Needs		Needs	Needs	N	eeds		Needs		Needs
Visual Checks		Ok	Attn Or	Ok	Attn Or	Ok	Attn Or	Ok Attn Or		Attn Or	Ok	Attn Or	Ok	Attn Or
			Repair		Repair		Repair	Repair		epair		Repair		Repair
1. Fluid levels- Oil, Radiator, Hydraulic (Driver replenish	h)													
2. Leaks- Hydraulic, Oil, Battery, Fuel														
3. Tires- Condition and Pressure														
4. Forks, Top Clip retaining pin and heel- Condition														
5. Load backrest Extension- solid attachment														
6. Hydraulic hoses, Mast chains & Stops														
7. Safety Warnings – attached and legible														
8. Operator manual – Located on truck and legible														
9. Capacity Plate – attached; information matches mod	el													
& Serial Nos and attachments.						<u> </u>				_				
10. Seat Belt – Buckle and retractor working smoothly														
Operational Checks		. —		. —					<del></del>		. —			
1. Accelerator Linkage														
2. Parking Brake														
3. Brakes (report to supervisor immediately)														
3. Steering (report to supervisor immediately)														
4. Drive Control – Forward and Reverse														
5. Tilt Control – Forward and Back														
6. Hoist and Lowering Control														
7. Attachment Control														
8. Horn														
9. Lights														
10 Back-up Alarm														
11. Battery load test (Electric powered trucks only-Watch battery indicator while holding lift lever. If needle moves to red area, battery does not have sufficient charge to operate truck properly)														
_	Checked By													
	Initials													



## **FermiLab- Forklift Operator Evaluation Form**

Operator Name	ID No.			Evalu	aluator Name ID No.			
Date of Evaluation	Equipment Operate		ated	đ				
Operator Behavi	iors	God	od	Fair	Poor	N/A	Comments	
Pre-use inspection						•	-	
1. Follow the Operator's daily chec	klist		1					
2. Looks for damage			i	一一				
3. Document all			1	一一	一一	一百		
Picking up a load								
1. Square up on the center of the l	oad		1					
2. Stop with the fork tips about 1 f		F	1	一一				
load	occironi ciro		_	Ш	Ш	Ш		
3. Clear personnel from the area of	f the load		1					
4. Level the forks; then slowly drive		Ē	1	一一	一百	一百		
until the load contacts the carria			•					
5. Lift the load carefully and smoot								
clear								
6. Tilt the mast back slightly to sta	bilize the		]					
load			_					
7. Look over both shoulders		L						
8. After out and stopped, lower the	e load to							
travel height								
Traveling			_					
1. Do not raise or lower the load a	nd forks	L	J					
while traveling			_					
2. Maintain a safe speed				<u> </u>				
3. Observe all traffic rules, warning load limits, and overhead cleara		L	J	Ш	Ш			
4. Keep arms and legs inside the fo		Г	1					
5. Follow other vehicles at a safe d		<b>-</b>	1					
6. Slow down when cornering		F	1	$\overline{}$	$\overline{}$	$ \overline{\Box}$		
7. Use the horn to alert others		<b>-</b>	┪	$\overline{H}$				
8. Travel with the load facing uphil	l while on a		┪	$\overline{H}$				
ramp or incline.	i willic on a	_	J	Ш	Ш			
9. Stop smoothly								
Putting Down A Load		•						
1. Make sure there is sufficient clea	arance for		]					
the load.			_					
2. Clear personnel from the area n								
3. Square up to the location; then	stop about		]					
1-foot away.			_					
4. Raise the load to placement leve	el		<u></u>					
5. Move slowly forward.		L		<u> </u>				
6. If the load is on the pallet, lowe								
position and lower the forks furt		_	1					
7. Look over both shoulders before		L		<u> </u>	<u> </u>	<u> </u>		
8. Back strait out until the forks ha		<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>		
9. Lower the forks to traveling pos	ition		_					

Operator Behaviors	Good	Fair	Poor	N/A	Comments
Parking					·
1. Fully lower the forks					
2. Neutralize the controls					
3. Set the brakes					
4. Turn off the power					
5. If parked on an incline, block the wheels.					
6. Park only in authorized areas					
Fueling and Battery Recharging					·
1. Engine off.					
2. Fire extinguisher nearby.					
3. Use required personal protective equipment as required by the Div/Sec instructions					
4. Safe fueling and battery recharging procedures followed.					
5. Spills cleaned up immediately					
Based on my evaluation, the operator has <b>successfully</b> completed the evaluation and is qualified to operate the following equipment.				ment Ty	zpe
Based on my evaluation, the opera <a href="https://hearth.net.net/">has not demonstrated competence operating the equipment.</a>					
<b>Evaluator Signature</b>			Opera	tor Sig	nature
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